(Pu)blic Works (1902) Department.

G.O., No. 6603 / 6615 I

DATED 12th June. 1902.

7/6/02

[Despatch Abstract.]

Counterweighted lift shutters for the West Tammileru Escape Kistna Eastern Delta

The estimate of Rs 29,520 for providing —— approved, and ~~[illegible]~~ a copy of the Pros: together with the estimate + plans for the work ordered to be forwarded to the G. of I for sanction.

Counterweighted lift shutters for the West Tammileru Escape, Kistna Eastern Delta:

Approving the estimate of Rs 29,520 for providing —— and forwarding a copy of the Pros: together with the estimate + plans for the work for the sanction of the G. of I.

P. W. 26.
500—12-8-01.

[illegible] [illegible] 2.6.02

IRRIGATION.
ACCOUNT.

Government {1902} of Madras.

PUBLIC WORKS.

Recd. } 1902. *Enclosures*

Regd. } 1902. *Spare copies*

G.O., Nos. 660, 661 I., 12th June 1902.

JUNE.

36162
29520
6642

Counterweighted lift-shutters for the West Tammileru Escape, Kistna Eastern Delta

Approving the estimate of Rs. 29,520 for providing —, and forwarding a copy of the Proceedings together with the estimate and plans for the work for the sanction of the Government of India.

GOVERNMENT OF MADRAS.

PUBLIC WORKS DEPARTMENT.

Irrigation.
Account.

READ—the following papers :—

From the Superintending Engineer, II Circle, dated 12th March 1901, No. 360 I.
To the " " II " " 6th April " " II./57 K.S.
From the " " II " " 4th April 1902, " 8 I.
From the " " II " " 3rd May " " 53 I.
To the " " II " " 12th " " " II./102 K.S.
From the General Superintendent, P.W. Workshops, dated 16th May 1902, No. 10/7 C.I.

ENCLOSURE.

REPORT to accompany the estimate for improvements to West Tammileru escape.

	RS.
Estimate	21,900

The drainage area of the Tammileru river, above the Ellore canal, is about 457 square miles. The drainage is passed across the canal by two inlets in its left bank, and by two escapes—the East and West Tammileru escapes—in the right bank.

The West Tammileru escape consists of twelve main arched vents, each of 16-feet span; and each 16-feet span is divided into two 8-feet spans by a grooved post in the middle. The shutters are each 8 feet wide and 5½ feet high, the full supply depth of water being level with the top of the shutters. Each 8-feet shutter is raised by means of a single rising screw only 1½ inches diameter, and an unsatisfactory pattern of screw box. The gearing is not at all powerful enough; it takes about five men to start each shutter, and the raising is very difficult and tedious. This is specially objectionable in the case of this escape, as the freshes in the Tammileru usually come down very suddenly, bringing large quantities of sand and debris. The establishment for working the shutters consists of only five lascars, and it can easily be understood that when a sudden fresh comes down at night, it is sometimes impossible to finish raising the 24 shutters before the flood has reached its maximum.

It is now proposed to remove the existing shutters and gearing and to replace them by iron roller shutters of 16-feet span and worm gearing of a design received from the General Superintendent, Public Works Workshops, Madras.

16th February 1902. (Signed) W. J. J. HOWLEY,
Ex. Engr., Kistna Eastern Divn.

No. 149 I.

Note by the Chief Engineer for Irrigation.

The drainage of the lands commanded by the Tammileru river above the Ellore canal, Kistna Eastern delta, passes across the canal by two inlets in its left bank and by two escapes, called the West and East Tammileru escapes, in its right bank. It has been found impossible for the establishment attached to the work to raise the existing shutters in the West Tammileru escape in time during floods. With the first of the papers read above, the Superintending Engineer, II Circle, submitted an estimate for fitting lift-shutters in lieu of the existing screw gearing ones which were reported to be unsatisfactory. As the bracing allowed in the design was not strong enough, the estimate was returned to the Superintending Engineer for revision with instructions to provide stronger channel irons. With his second letter read above, he submitted a revised estimate of Rs. 21,600 for the work. As it was considered necessary to provide counterweights for the shutters, the design was revised by the General Superintendent, Public Works Workshops, thus raising the amount of the estimate to Rs. 24,000. The estimate as altered may be approved and forwarded for the sanction of the Government of India.

2. The work is classed as "unremunerative" as it is not directly remunerative in itself, but being required for the full development of the Kistna Delta system may be charged to the Open Capital account thereof. It will probably be completed by the 31st March 1903.

(Signed) A. W. SMART, Col., R.E.,
Ag. Chief Engineer for Irrigation.

28th May 1902.

ORDER—No. 660 I., dated 12th June 1902.

The following estimate is approved: —

Imperial.
Capital Expenditure not charged to Revenue.
49. Irrigation.
Kistna Delta System.
Eastern Division.
Open Capital Account.
Ellore Canal.
I. Works.
2. Main Canals and Branches.
H. Escapes.
Unremunerative Work.
Providing counterweighted lift-shutters for the West Tammileru Escape.

Estimate—	RS.
I. Works	24,000
II. Establishment	5,520
Total ...	29,520

2. Ordered that a copy of these Proceedings, together with the estimate and plans for the work referred to, be forwarded to the Government of India with a request that sanction to the estimate may be communicated at an early date.

[Here enter No. 661 I., dated 12th June 1902.]

(True Extract.)

(Signed) A. W. SMART, Col., R.E.,
Ag. Joint Secretary to Government,
Irrigation Branch.

To the Chief Engineer for Irrigation.
" Superintending Engineer, II Circle.
" Examiner, Public Works Accounts.

ENDORSEMENT—No. 661 I., dated 12th June 1902.

Forwarded.

(By order.)

(Signed) A. W. SMART, Col., R.E.,
Ag. Joint Secretary to Government,
Irrigation Branch.

Exd. T. K. Narayana Aiyangar.

Public Works (1901) Department.

CURRENT No. ~~64 K.S~~
PWE1
5737/2

From
The Superintending Engineer
2nd Circle

Order.—

No. 360 D.

Dated 12 March 1901.

Received }
14 . 3 . 01.
Registered }

Enclosures 3 { 1 plan (in a roll) / ~~2 other papers~~ }

Spare copies.

SUBJECT.

12 Lift Shutters for the West Tammaleru Escape on the Ellore Canal. Requests to be informed whether the Estimate for — is to be completed & submitted for sanction.

Papers
DE 1.

16/3/01

16-3-01

No. 173.
3,000—25-4-00

BACK PAPERS.

No.	Date.
R193KS	12-12-91

FURTHER PAPERS.

No.	Date.
157 KS	6-4-77
R123KS	4-4-00

Superintending Engineer's Office, II Circle,

BEZWADA, 12 March 1901.

No. 360 I

From

Col. C. C. Rawson R.E.

SUPERINTENDING ENGINEER,

II CIRCLE,

To

THE Chief Engineer
for Irrigation

CHIEF ENGINEER FOR IRRIGATION 14 MAR 1901 64 K.S.

SIR,

Enclosures. 3

I have the honor to forward copy of letter no: 810 R.E. dated 5th March 1901 together with a plan and Estimate for 12 lift-Shutters for the West Tammileru Escape on the Ellore Canal and request your orders as to whether the Estimate is to be completed and Submitted for Sanction.

I believe that some arrangement of the kind is very much required and if four of the new Shutters were fixed each year the work could be completed in three years.

I have the honour to be
Sir
Your most obedient Servant
C. C. Rawson
12/3/01 Col R.E.
~~Superintending Engineer~~

31/13

Item No. 21

Public Works (190/) Department.

IRRIGATION BRANCH.

ISSUE No. ~~57 KS.~~ II

PWE2 / 5737/2

To

The Supg Engineer 2nd Circle

(Reply to letter No. , dated)

Dated 6-4-01.

Despatched 8 — do

Enclosures * 3

* Particulars of Enclosures.

1 Report
1 Estc
1 Plan

SUBJECT.

Lift Shutters for the west Tammaleru Escape on the Ellore Canal — Returning plan and estimate of the — for revision with reference to the remarks noted within.

Indexed

E. I. Form No. 13—4,000—29-6-00.

BACK PAPERS.

No.	Date.

Sent to Government with No. I.,

dated 190 .

Printed with G.O., No. I.,

dated 190 .

REMINDERS ISSUED.

No. 1, dated 190 .

" 2 "

" 3 "

" 4 "

" 5 "

KEEP-WITHS.

FURTHER PAPERS.

No.	Date.
R 123 KS	4. 4. 02

Papers-
R64 KS/01
R193 KS/91
R114 KS/91
GO 285 Idy 24. 3. 96
GO 37 Idy 15. 1. 96
GO 885 Idy 29. 10. 95
GO 845 Idy 16. 10. 95
GO 149 Idy 13. 3. 91
GO 193 Idy 24. 3. 90

No 57 KB dy. 6-4-01

Memo

The undersigned has the honour to return the plan and Estimate of two lift shutters submitted with the SE's letter, No. 360. I dated 12-3-01, for revision with ~~the following~~ replacement remarks:—

The ~~total~~ max^m deflection of the Chan. irons as calculated in this office, amounts to ·78 inch, which seems too much and it will increase as the shutters decay through rust. It will be better to put in stronger Channel irons at once.

~~The L and T irons in front of the shutter, it is presumed, merely distribute the pressure.~~

It is not ~~quite~~ clear from the report how the rollers are made capable of a rocking motion.

Encs 3.

R. 12 KB 4. 4. 02

A.M.
6/4/01

W.H.
6/4/01

To
The Superintending Engr.
2nd Circle.

Referen:
[illegible] 16.4.01
R 193 14/4/01
[illegible] 14/4/01
No 285 Jay 24. 3. 96
No 57 Jay 15. 1. 96
No 885 Jay 29. 10. 95
No 845 Jay 16. 10. 95
No 114 Jay 13. 3. 91
No 193 Jay 24. 3. 98

[illegible] 26/4/01
Rio
4/4/02.

3,000—20-5-01

Public Works (1902) Department.

CURRENT No. ~~123~~ K.S. P.S.3 / 5737/2

From

[Name] F. F. O'Connell Esquire

[Designation] Offg. Superintending Engineer II circle

[Station] Bezwada

No. 39.

Dated 4-4-1902

Enclosures { Plans 4 / Others 9 } Total 13

Spare copies

Received 5. 4. 1902

Registered 5. 4. 1902

SUBJECT.

"Estimate"

Submits — with plans for "Improvements to West Gammileru escape as altered amounting to Rs 21,600 with a request that Sanction of Government may be obtained for the Same —.

BACK PAPERS.

Papers

D.E.I. for orders.

FURTHER PAPERS.

C246 M/16 8 02

D 7/5/4/02

BW 5/4

To

The $\dfrac{\textit{Chief Engineer}}{\textit{Secretary to Government}}$*, Public Works Department.*

Sir,

From W. J. Hawley Esquire, A.M.I.C.E.
Executive Engineer Kistna Eastern
Division to the Superintending Engineer
II Circle No. 769 SE d/ 14/7 - 2 - 02

With reference to your endorsement No. 45 K.E. dated 12-4-01 on Memorandum No. 57 KS dated 6-4-01 from the Chief Engineer for Irrigation I have the honour to submit herewith for sanction an Estimate amounting to Rs 21400 for Improvements to West Jammalern Escape.

The information called for in the Chief Engineer's Memorandum is given in the enclosed copy of letter No. W/29 KTE, dated 23-12-01 from the General Superintendent P.W. Workshops

---

Enclo - 13

No. 39. of 4-4-02

4 plans (by a separate packet)

Copy forwarded to the Chief Engineer for Irrigation with reference to his memo No. II/57 KS d/ 6-4-01.

Flag B

2. These shutters are not counterweighted but it is believed that they are now being fitted with counterweights. If this is the case it is requested that the

necessary alterations may be made by the P. W. Workshops.

3. The Estimate as altered in this office to Rs 21600 with plans are submitted with a request that sanction of Government may be obtained to the same. Chargeable to the open capital account of the Kistna Delta system.

CHIEF ENGINEER FOR IRRIGATION.
5- APR. 1902
No. 123 KS

[illegible]

Offg Superintending Engineer
II Circle.

3/4/02

14

5/1248/02
18 FEB
SECO

From the General Superintendent, Public Works Stores to the Executive Engineer, Kistna Eastern, P.W.D. Bezwada No. $\frac{\text{W-K.T.E.}}{29}$ dated $\frac{23^{rd}}{24^{th}}$ December 01

With reference to your letter No. 751 mis., dated 15th August 1901, I have the honour to forward herewith the Estimate for "West Tammileru Escape" duly revised with Stronger Section of Channels put in, Vide Calculation-sheet hereto attached.

2. The probable cost of 12 Shutters delivered on Boat at Bezwada, will be about Rs. 16,440.⊕

⊕ For works other than ~~Civil Buildings~~ ~~Provincial~~ Service = 17% on this amount or Rs. 2880. @ Rs ~~240~~ 236 for each shutter, will have to be added. Then the total will be ~~16440~~ 16680 + ~~2880~~ 2836 = 19,320.×

× Correction in G.E. Office 16680 + 2836 = 19516

3. With regard to the Concluding para of the Chief Engineer's Memo No. 57 K.S. dated 6th April 1901 as to how the rollers are made capable of a rocking Motion, it can be seen from the plan, that the roller boxes with the rollers, are attached to the channels by only one bolt at the top and bottom on the back of the Shutters. As the axis of these bolts, is in the same straight line, the roller and roller-box can oscilate about this axis. The

gearing

gearing has been made much easier to work on; in the former design, three revolutions of the handle at 26 lbs. pressure was calculated to raise the Shutter by one Inch, and in the present design, seven revolutions at 13 lbs. pressure, does, approximately the Same.

(True Copy)

W. J. Hoste
Ex. Engineer,
K. E. Dn.
16.2.02

16.2.02.

16 FEB 1902

CHIEF ENGINEER.
FOR IRRIGATION.
5th APR 1902
No. 125

PWEy
5751

Report to accompany the Estimate for Lift Shutters for West Tammilern Escape

SUPG. ENG. No 9/1248K2 18 FEB. SEC

Number of Shutters 12. Clear Span 16'-0" Height 5'-6". Amount of Estimate ~~Rs. 16,440~~ 16680.

The Shutter is Constructed of 4 Channels of 6"x4"x½ to ⅝" (Section C7 Page 55 of Dorman Long and Company's Catalogue 1895) and ⅜" Vertical Sheeting.

2. These Channels are spaced to equal pressure when the water is on a level with the top of the Shutter.

3. Two Cast iron rollers are provided on each side to reduce friction and fitted to the channels at the back of the Shutter by a bolt at top and bottom as will be seen from the plan, this gives the bracket an oscilating motion and makes up for any deflection of the Shutter due to the pressure of water in front. The rollers are provided with delta metal bushes and the roller pins also bear delta metal coating.

4. The roller paths are Steel channels 10"x3"x7/16" (Section C11 Page 53 of Dorman Long and Co's Catalogue 1895) resting on foot plates as shewn in the plan.

5. The roller paths are Connected by a Cross channel to keep them in

position

position and to support a cast iron bearing for the shaft.

6. The Shutter is lifted by two 5/8" Chains one at each end. The chains wind round the cast iron drums provided with right and left hand grooves as shewn in the plan.

7. The gearing is in the form of an ordinary crab winch and consists of a worm which turns a worm wheel. On the same shaft as the worm wheel is a pinion which turns a cog wheel and a pinion mounted on an intermediate shaft. The latter pinion turns a cog wheel mounted on the same shaft as the drum.

8. The shaft on which the worm wheel is mounted is continued to the opposite side where the gearing is just the same with the exception of the worm and the worm wheel.

9. The winch has a good bearing on the masonry and is also held fast by holding down bolts and anchor plates which

makes

makes the arrangement quite compact and very rigid.

10. By turning the worm by means of the handle both sides of the shutter are lifted at the same rate. The closing of the shutter is effected by the unbalanced weight of the shutter itself.

11. The shutter can be lifted by 1 man exerting a ~~fource~~ force of about 13 lbs at the end of the handle (radius of the handle = 10½"), & 7 revolutions of which raises the shutter about an inch.

12. Leakage is prevented by means of a spring plate 1/8" thick which slides against an angle iron fixed in the masonry in front.

Signed:- A. Egerton Ferris 23/12/01.
Locomotive Superintendent
S.I.R. Work Shops

Madras }
23rd December 1901 }

(True Copy)

W. J. Hosty(?)
Ex. Engineer,
K.E. Wks.

Ca
16/2/02

16-2-02

16 FEB 1902

CHIEF ENGINEER
FOR IRRIGATION.
5 APR 1902
No. 1123 K.I.
2

makes the [illegible] quite compact and rigid.

10. By turning the worm by means of the handle both sides of the shutter are lifted at the same rate. The closing of the shutter is effected by the unbalanced weight of the shutter itself.

11. The shutter can be lifted by one man exerting a force of about 13 lbs at the end of the handle (radius of the handle = 10½"), 47 revolutions of which raises the shutter about one inch.

The back-lash is prevented by means of a spring plate 1/8" thick which bears against an angle iron fixed in the masonry in front.

Signed — A. Egerton [illegible] 10/12

PWD 25
5737/L

E. 120.
50,000—11-3-1901.

ESTIMATE FORM.—Detail Measurements.

S.P.G. ENGINE[illegible] No. 9/1228 [illegible] 1[illegible] FEB 02 SE[illegible]

Detail of Work.	Number.	Measurements in Feet. Length.	Breadth.	Depth.	Area or Contents.	Total Quantity of each Description of work.
1	2	3	4	5	6	7
Estimate for Lift shutters for West Tammileru Escape, Kistna Eastern Division. Clear span 16'-0". Height 6'-0". Total no. of shutters 12						
Movable shutter						
Channel iron horizontal of shutter	4	18'-0"	(6"×4"×½")		1911	26.55 lbs per ft
Angle iron struts diagonal	4	3'-3"	(2½"×2½"×⅜")		75	5.78 — " —
Do — vertical	4	2'-0"	— do —		46	— " —
Angle irons in rear of shutter at ends	2	4'-0"	(4"×2"×⅜")		56	7.03 — " —
Do at centre	1	4'-0"	(2"×2"×⅜")		18	4.53 — " —
Do in front of shutter	8	5'-6"	(2½"×2½"×⅜")		254	5.78 — " —
T Irons in front of shutter	4	5'-6"	(— Do —)		127	5.78 — " —
Angle irons over leakage plate	2	5'-6"	(2"×2"×¼")		3~~4~~5	3.19 — " —
Total					252~~x~~2	
Add 5% for Sundries & wastage					125	
Total Quantity of chl & T.					264~~6~~7	23.62 Cwt
Sheet and flat bar						
Shutter plate	1	16'-0"	5'-6"	⅜"	1320	
Leakage plate at ends	2	5'-6"	0'-9"	⅛"	41	
Plate holding the chain	2	1'-6"	6"	¾"	45	
Total					1406	
Added 5% for Sundries & wastage					70	
Total lbs					1476	
					or	13.18 cwts

ESTIMATE FORM.—Detail Measurements.

Detail of Work.	Number.	Measurements in Feet. Length.	Breadth.	Depth.	Area or Contents.	Total Quantity of each description of work.
1	2	3	4	5	6	7
Bolts						
Bolts to connect shutter plate						
& channels irons	64	4½"	¾ diar		35	
Do – for double angle irons in front	18	4½"	— "	—	10	
Do – for angle irons in rear	12	4½"	— "	—	7	
Do – for leakage plate	12	4½"	— "	—	7	
Do – for angle iron struts	16	4½"	— "	—	9	
Do – for roller boxes	8	6"	1" diar		10	
Do – for plate holding the chain	8	4½"	¾" diar		4	
Adjusting screw at the end						
of chain	2	1-3	1½" dr		15	
Total					97	
Add 5% for Sundries & wastage					5	
Total					102	102 lbs
Nuts ¾" diameter	130	3.20			26	
1" diar;	8	8.0			4	
1½" diar;	2	1.25	lb		3	
Total					33	
Add for Sundries					3	
Total					36	36 lbs
Rivets 5/8" diameter for angle						
irons in front of shutter	80	2"	5/8" diar		14	
Do – for T Irons in front	80	2"	½" diar		9	
					23	
Add for Sundries					2	
Total					25	25 lbs

ESTIMATE FORM.—Detail Measurements.

Detail of Work.	Number.	Measurements in Feet. Length.	Breadth.	Depth.	Area or Contents.	Total Quantity of each Description of work.
1	2	3	4	5	6	7
Cast iron rollers 6" diar and 4" wide with delta metal coated pins, bushes and cast iron roller boxes &c complete	No. 4					No. 4
Painting	L. S.		6 Sqrs			6 Sqrs
Fframe work including sill girder and Hand railing &c						
Channel iron roller paths	2	15'-3"	(10"×3"×7/16")		686	22.49 lbs p ft.
Cross channel at top	1	18'-8"	— do —		420	— do —
Angle irons at corners of masonry in front	2	14'-0"	(2½"×2½"×3/8")		162	5.78
Angle iron pieces at foundations	4	0'-9"	— do —		17	
Total					1285	
Add 5% for Sundries					65	
Total					1350	or 12.06 cwts
Sheet and flat bar						
Ffoundation plates at sides two taken as one	2	1'-6"	0'-9"	3/8"	34	
Foot plates	2	1'-0"	0'-11"	½"	37	
C. O.					71	

ESTIMATE FORM.—Detail Measurements.

Detail of Work.	Number.	Length.	Breadth.	Depth.	Area or Contents.	Total Quantity of each description of work.
1	2	3	4	5	6	7
B. Fd					71	
Hold fast plates for angle irons at Corners of masonry in front	2	0.6"	2½"	3/8"	3	
Total					74	
Add 5% for Sundries & wastage					6	
Total					80	or 0.72 Cwts
Rolled steel Girders (5"×3")	1	18.0"	5"×3"			
	at 11.00 lbs per ft.				198	
Add 5% for Sundries					10	
Total					208	1.86 Cwts
Bolts						
For foundation plates	12	5"	3/4" diar		8	
For cross channels at top	10	5"	— do —		7	
Hold fast bolts for angles at Corners of masonry in front	2	3-0"	7/8" dr.		12	
Total					27	
Add 5% for Sundries		say			1	
Total					28	28 lbs
Nuts 7/8" diameter	2	5.00			1	
3/4" — " —	22	3.2			5	
Total					6	
Add for wastage say					1	
Total					7	7 lbs
Rivets						
In foundation plates	24	2"	5/8" dr.		4	
C.O					4	

ESTIMATE FORM.—Detail Measurements.

Detail of Work.	Number.	Measurements in Feet. Length.	Breadth.	Depth.	Area or Contents.	Total Quantity of each Description of work.
1	2	3	4	5	6	7
B. F1					4	
Add for Sundries					1	
Total					5	5 lbs
Hand railing with two lines of $1\frac{1}{4}$" gas pipe and wrought iron standards $1\frac{1}{4}$" diar & 2.6 high complete with bolts	1	19.0 Rft			19	19 Rft
Painting		L.S				3 Sqrs
Gearing arrangement, including shaft, chain, cast iron bearing for the shaft at entrance.						
Cast iron work						
Worm 4" diar & 6" long	1	lbs 15.00 Each			15	
Worm wheel 18" diar & $2\frac{3}{4}$" wide	1	156.00 Each			156	
Gearing Cogwheel 18 dr & $2\frac{3}{4}$ wide	4	100.00 lbs			400	
Pinions 7" diar $2\frac{3}{4}$" wide	4	13.00 lbs			52	
Drums 12" diar 8" long	2	42.00			84	
Brackets for the worm	1	50.00			50	
Bushes for —do—	2	5.00			10	
Cast iron Collars for —do—	6	4.00			24	
Total					791	
Add 5% for Sundries and wastage					56	
Total				lbs	847	or 7.60 Cwts

E. 120
50,000—11-3-1901.

ESTIMATE FORM.—Detail Measurements.

Detail of Work.	Number.	Length.	Breadth.	Depth.	Area or Contents.	Total Quantity of each description of work.
		Measurements in Feet.				
1	2	3	4	5	6	7
Wrought iron work						
winch plates two taken together as one	2	4'.8"	2'.6"	3/8"	350	✓
Plates at the bottom of the winch	6	1'.6"	(6"x1/2")		90	✓
Angle irons of the winch	4	3'.0"	(3"x3"x1/2")		~~130~~ 110	
Anchor plates large	1	3'.0" x	1'.6" x	1/2"	90	✓
Do small	1	3'.0"	0'.6" x	1/2"	30	
Handle average	1	3'.0"	1 1/4" diar		12	
Axles for the drum, cog wheels	4	2'.4"	3" diar		~~120~~ 220	
Do for the worm	1	1'.6"	1 1/4 diar		6	
Anchor bolts	6	4'.0"	1 1/8" diar		80	✓
Tie bolts for the winch	10	1'.3"	3/4" diar		18	✓
Bolts for collars, small average	24	3"	3/8" dias		2	✓
Set screws for collars on the main shaft	2	1 1/2"	1/2" do		1	
Bolts for bracket of the worm	2	3"	3/4" do		1	✓
Bolts for bushes	6	3"	3/8" diar		1	✓
Bolts for cast iron bearing at centre	6	4"	5/8 diar		2	✓
Bolts for attaching the chain with the drum	2	6"	7/8 diar		2	✓
Collars for the main shaft	2	1'0"	1 1/2" x 5/8"		5	✓
Keys for the drum	2	1.10	5/8" x 5/8"		5	✓
other keys	5	6" long say			3	
Total					~~948~~ 1028	
Add 5% for sundries & wastage					~~48~~ 52	
Total					~~996~~ 1080	~~996~~ 1080 lbs

ESTIMATE FORM.—Detail Measurements.

Detail of Work.	Number.	Length. (Measurements in Feet)	Breadth.	Depth.	Area or Contents.	Total Quantity of each Description of work.
1	2	3	4	5	6	7
B. F.					4	
Add for Sundries					1	
Total					5	5 lbs
Hand railing with two lines of 1¼" gas pipe and wrought iron standards 1¼" diar & 2'.6" high complete with bolts	1	19.0 Rft			19	19 Rft
Painting		L.S				3 Sqrs
Gearing arrangement, including Shaft, chain, cast iron bearing for the shaft at centres.						
Cast iron work						
Worm 4" diar & 6" long	1	lbs 15.00 each			15	
Worm wheel 18" diar & 2¾" wide	1	156.00 each			156	
Gearing Cog wheel 18 dr & 2¾" wide	4	100.00 lbs			400	
Pinions 7" diar 2¾" wide	4	13.00 lbs			52	
Drums 12" diar 8" long	2	42.00			84	
Brackets for the worm	1	50.00			50	
Bushes for —do—	2	5.00			10	
Cast iron Collars for —do—	6	4.00			24	
Total					791	
Add 5% for Sundries and wastage					56	
Total				lbs	847	
					or	7.60 Cwts

ESTIMATE FORM.—Detail Measurements.

Detail of Work.	Number.	Measurements in Feet. Length.	Breadth.	Depth.	Area or Contents.	Total Quantity of each Description of work.
1	2	3	4	5	6	7
Nuts 1 1/8" diameter	6	10.00 oz each			3.75	
7/8" diameter	2	5 oz — " —			0.63	
3/4" diameter	12	3 oz — " —			2.40	
5/8" diameter	15	2.00 oz each			1.90	
3/8 diameter	30	say			2.50	
		Total			11.18	
		Add			0.82	
		Total lbs			12.00	12.00 lbs
Rivets for the angles of the winch	40	2"	1/2" dias		7	
For the plates of the winch	16	2"	1/2" dr say		2	
					9	
		Add			3	
		Total			12	12 lbs
Mainshaft 2 1/2" dr	1	19'.0" (16.37)			311	
Add 5%					15	
		Total			326	326 lbs
Cast iron Bracket for the support of the shaft at centre		No 1				No 1
Chain to lift the shutter (5/8) short linked, weighing about 25 lbs per fathom	2	20 Rft				40 Rft

E. 120
50,000—11-3-1901.

ESTIMATE FORM.—Detail Measurements.

Detail of Work.	Number.	Measurements in Feet.			Area or Contents.	Total Quantity of each description of work.
		Length.	Breadth.	Depth.		
1	2	3	4	5	6	7

ESTIMATE FORM.—Abstract.

Quantity.	Description of Work.	Rate.	Per	Amount	Total.
1	2	3	4	5	6
		Rs.		Rs.	Rs.
	Estimate for lift shutters for Tammi-leru Escape—Kistna Eastern Dn.				
	Clear Span 16'-0" Height 5'-6"				
	Total number of shutters 12.				
	One Shutter:—				
	Moveable Shutter.				
23.62 cwts.	Channel angle and T Iron	11-0-0	Cwt.	260	
13.18 —"—	Sheet and flat bar	14-0-0	cwt	185	
102 lbs	Bolts	18-0-0	cwt	~~17~~ 16	
36 lbs.	Nuts	18-0-0	cwt	6	
25½ lbs	Rivets	0-2-0	lb	3	
No. 4	Cast iron rollers 6" diamtr. & 4" wide with delta metal Coated pins bushes, and cast iron for rollers & Complete	30-0-0	Each	120	
6 sqrs.	Painting	1-8-0	Sqr.	9	
	Total	Rs.		~~600~~ 599	or 600
	Signed:- A. Egerton Ferns. 23/12/01. Asstt. Engineer for Gl. Supdt. P.W. Workshops.				
	Supdg. Engr. 2nd Circle				

Grand Total of Estimate ..

P.S.
27-3-02 (True Copy)

Station,
Date, 190

W. J. Stokes
Executive Engineer.

CHIEF ENGINEER
FOR IRRIGATION.
6- APR 1902
No. 123 K1/4

(E. No. 123.)

50,000—24-10-00.

SUPERINTENDING ENGINEER'S OFFICE
18 FEB 1902
SECOND CIRCLE

CIRCLE—

DIVISION—

DISTRICT—

TALUK (OR ESTATE IN CASE OF ESTATE WORKS).

ESTIMATE FORM.—Abstract.

Financial Head—

Budget Head—

Departmental Head—

Main Head—

Sub-Head—

Project of which the work forms part—

Section—

Name of Work—

Amount of Estimate, Rs.

To be carried out by—

REFERENCES.

P.W. Ex.
5737/2

ESTIMATE FORM.—Abstract.

Quantity.	Description of Work.	Rate.	Per	Amount	TOTAL.
1	2	3	4	5	6
		RS.		RS.	RS.
	Frame work including sill girder &c.				
12.06 cwts	Channel and angle iron	11-0-0	cwt.	133	✓
0.72 "	Sheet and flat bar	14-0-0	cwt.	10	✓
1.86 "	Rolled Steel girders	8-0-0	cwt.	15	✓
28 lbs.	Bolts	18-0-0	cwt	5	✓
7 lbs.	Nuts	18-0-0	cwt.	1	✓
5 lbs.	Rivets	0-2-0	lb say	1	✓
19 Rft.	Hand railing with two lines of 1¼" gas pipe, with w. I. Standards 1¼" diamr. and 2'-6" high	2-8-0	Rft.	48	✓
3 sqrs.	Painting, two Coats of chocolate	1-8-0	Sqr.	5	✓
				218	✓

Signed:- A. Egerton Jervis 23/12/01.
Asstt. Engineer for G.b.
Supdt. P.W.W.

Supdg. Engr. 2nd Circle

Grand Total of Estimate ..

P.L.
27-3-02 (True Copy)

STATION,
Date, 190 .

W. J. Stocks
Executive Engineer.

(E. No. 123.)

60,000—24-10-00.

CHIEF ENGINEER FOR IRRIGATION.
5- APR. 1902
No. 123/5

CIRCLE—

DIVISION—

DISTRICT—

TALUK (OR ESTATE IN CASE OF ESTATE WORKS).

ESTIMATE FORM.—Abstract.

Financial Head—

Budget Head—

Departmental Head—

Main Head—

Sub-Head—

Project of which the work forms part—

Section—

Name of Work—

Amount of Estimate, Rs.

To be carried out by—

REFERENCES.

PWE 5737/

ESTIMATE FORM.—Abstract.

Quantity.	Description of Work.	Rate.	Per	Amount	TOTAL.
1	2	3	4	5	6
		RS.		RS.	RS.
	Gearing arrangement including Gearing Shaft &c.—				
7.60 cwts	Cast iron work, wheels &c.	8-00	cwt	61	
~~996~~ 1080 lbs.	Wrought iron work Complete	0-3-0	lb	~~187~~ 203	
12.00 lbs.	Nuts	18-0-0	cwt	2	
12.00 lbs.	Rivets	0-2-0	lbs	2	
326 lbs.	Main shaft	0-2-0	lb	41	
No. 1	Cast iron Bracket for the Main Shaft	L.S.		8	
40 Rft	Chain 5/8" dia best tested, short links weighing 25 lbs per fathom	1-0-0	Rft	40	
	Painting	L.S.		3	
		Total		~~344~~ 360	

Signed:— A. Egerton Ferns 23/12/01.
Asst: Engineer for Gl.
Supdt., P.W. Workshops.

Supdg. Engr. 2nd Circle

Grand Total of Estimate ..

P.C.
27-3-02

(True Copy)

STATION,

Date, 190

W. J. Horley
Executive Engineer.

PWG 737/2

16 FEB 1902

CHIEF ENGINEER FOR IRRIGATION.
5- APR.1902
No. 123

18 FEB. 02

(E. No. 123.)

50,000—21 10 00.

CIRCLE—

DIVISION—

DISTRICT—

TALUK (OR ESTATE IN CASE OF ESTATE WORKS).

ESTIMATE FORM.—Abstract.

Financial Head—

Budget Head—

Departmental Head—

Main Head—

Sub-Head—

Project of which the work forms part—

Section—

Name of Work—

Amount of Estimate, Rs.

To be carried out by—

REFERENCES.

2

ESTIMATE FORM.—Abstract.

Quantity.	Description of Work.	Rate.	Per	Amount	TOTAL.
1	2	3	4	5	6
		RS.		RS.	RS.
	Lift Shutters for West Tammilom Escape Clear Span 16'0" Height 6'0" No. of Shutters 12				
	Abstract General				
	Moveable Shutter	-	-	600	
	Frame including Sill Girder &c			218	
	Gearing arrangement			~~344~~ 360	
	Fitting at Site			72	
	Packing charges			6	
	General Charges			80	
	Cartage from Shops to Madras Basin (Weight about 6½ Tons)			6	
	Boat charges for the Conveyance of articles from Madras Basin to Bezwada			~~44~~ 48	
	Total for One Shutter			~~1370~~ 1390	
	∴ 12 Shutters Cost 12 × ~~1370~~ 1390 =			~~16440~~ 16680	
				2836	
				19476	
	N.B.				
	If the work is for any other Service than "Provincial Civil buildings" 17% on the total will have to be added. i.e., 240 Rs. extra on each Shutter or 2880 Rs. for all the twelve Shutters.				
236					
2838					
	Supdt. Engr. 2nd Circle				

Cancelled

Signed:- A. Egerton
Asst. Engineer for Genl. Supdt., P.W. Workshops.

Grand Total of Estimate Rs. ~~16,440~~ 16680

P.W. 210 / 5737/–

STATION, ——— } (True Copy)

Date, ——— 190 . }

L. J. Hartley
Executive Engineer. K. E. Dn.

P.C. 27-2-02

Cy 16/2/02

B 16.2.02.

16 FEB 1902

CHIEF ENGINEER
FOR IRRIGATION.
5 - APR. 1902
No. 123 KS

6/1248 KE (E. No. 123.)
50,000—24-10-00.

13 FEB. 02

CIRCLE— Second

DIVISION— Kistna Eastern

DISTRICT— Kistna.

TALUK (OR ESTATE IN CASE OF ESTATE WORKS).

ESTIMATE FORM.—Abstract.

Financial Head—

Budget Head—

Departmental Head—

Main Head—

Sub-Head—

Project of which the work forms part—

Section—

Name of Work— Lift Shutters for West Tammileru Escape.

Amount of Estimate, Rs. ~~16,440~~ 16680

To be carried out by— P. W. D.

REFERENCES.

Improvements to West Tammilern Escape.

Description.	Quantity.	Particulars.	Rate. RS.	A.	P.	Per.	Amount. RS.	A.	P.	TOTAL. RS.	A.	P.
Cut stone work in chunam.	100 cft	Rate for Pedanagiri stones delivered at site	10	-	-	cys.	40	11	10			
		Labour as per Schedule	.	.	.	.	20	12	-			
		Mortar & grinding charges as per Schedule	.	.	.	.	1	12	.			
	9 cft	Puntage for lime 38 m	.	.	4	45 cft per mile	-	2	6			
	27 cft	Loading & unloading Lime Sand	"	4	"	45 cft	.	2	~~6~~ 5			
		Total Rupees.					63	8	~~10~~ 9	63	9	"
Brick in mortar	100 cft	Rate as per Schedule	17	4	"	100 cft	17	4	.			
	1700	Bricks puntage for 38 m	"	1	"	1000 per mile	4	"	6			
		Loading & unloading bricks	"	4	"	1000	"	6	9			
	13½ cft	Lime puntage for 38 m	-	-	4	45 cft per mile	"	3	10			
	27 cft	Sand Do. Do.	"	"	7	do.	"	13	4			
		Loading & unloading lime & sand	"	4	"	45 cft	.	3	7			
		Total Rs.					23	0	0	23	"	"

appears to be right

W. J. Hoaly
Exe Engineer
K. E. Dn.

16.2.02

16 FEB 1902

Compd

D. P. W.

CHIEF ENGINEER
FOR IRRIGATION.
5 APR 1902
No.

SECOND CIRCLE.

KISTNA EASTERN DIVISION.

Data to accompany the Plans and Estimates for the

Description.	Materials and Labour.					Per.	Amount.			Total.		
	Quantitiy.	Particulars.	Rate.									
			RS.	A.	P.			A.	P.	RS.	A.	P.

PW 612
5731/2

3,000—20-5-01.

Public Works (190) Department.

CURRENT No. ~~150 H.S.~~ PWS15 5737/2 Wolfcut

From

[Name] H. H. O'Connell Esquire

[Designation] Offg. Superintending Engineer II Circle

[Station] Bezwada

No. 539.

Dated 3/5/1902

Enclosures { Plans / Others } Total

Spare copies

Received 190 .

Registered 190 .

SUBJECT.

"West Tammileru Escape"

Requests for favor of early orders being issued on the plans and estimates of ____ under the circumstances explained by Ex: Engineer Kistna Eastern Divn.

BACK PAPERS. Papers

R'ubh/16-5-02

FURTHER PAPERS.

5/5/02

Public Works ([illegible]) Department.

To

The Chief Engineer / Secretary to Government, Public Works Department.

Sir,

From W. J. Howley Esq. Executive Engineer Kistna Eastern Division, to the Supdt. Engineer 2nd Circle, dated 26-4-02, No. 675 E.

I submitted with my letter No. 769 E. dated 14/17-2-02, an Estimate amounting to Rs 21,400/- for Improvements to the West Tammileru Escape, Ellore Canal. The proposed improvements consist in the most part in fitting new steel roller shutters in place of the existing un-satisfactory screw gearing shutters.

2. The remarks made in the report accompanying the above Estimate apply equally to the East Tammileru (or Chataparru) Escape, which you have recently inspected at Ellore. In this case, too, and for the same reasons it is proposed to fit steel roller shutters.

3. A point of difference, however, is that the Chataparru Escape is in much worse order than the West Tammileru Escape, and that the gearings and beams must certainly be renewed next year.

4. In your letter No. 454 K.W. dy 14.11.01 to the Executive Engineer Kistna Northern Division, you called for an Estimate for renewing the beams and gearings

of

of the Escape; and I have received from the Head Works Sub-Division Officer an estimate amounting to no less than Rs 4,400/- for this work ~~done~~ alone.

5. It seems a pity that a large expenditure of this kind should be incurred while it is still under contemplation to fit the Escape with roller shutters; and I have ascertained that the present beams and gearing may be allowed, with your approval, to stand for another year, without any serious risk or difficulty.

6. If orders were passed with reference to the estimate submitted for the West Dammileru Escape, I should be in a position to submit proposals for the East Dammileru Escape also, but till orders are passed on the proposals already submitted, it would seem unnecessary, in view of the present great pressure of work in the Division, to waste time drawing up a detailed estimate that will probably not be accepted.

7. The East Dammileru Escape is an important one with eight vents of 20 ft span, and eleven vents of 7½ ft span.

8. I have the honour, therefore, to request permission to leave the clearings as they are for this year; and to request also that orders may be passed as soon as possible on the proposals submitted for the West Dammilera Estate.

No. 539 dated 3rd May/02

Forwarded to the Chief Engineer for Irrigation with reference to this Office No. 39 dated 4th April 1902 for favour of early orders being issued on the plans and estimates of West Dammilera Estate.

(Sd.) Hugh O'Connor

Offg. Superintending Engineer
2nd Circle

[initials] 2/5/02

Public Works (1902) Department

IRRIGATION BRANCH.

ISSUE No. II/102KS

Pro E16 5737/2

To

The Supg Engineer II Circle

(Reply to letter No. , dated)

Dated 12 5. 02

Despatched 15. do

Enclosures *

* Particulars of Enclosures.

SUBJECT.

West Tammileru Escape

Informing that estes for impts to the — will be submitted for sanction of Gov on receipt of plan & esti of the lift shutter now under revision in the P W workshops.

E. I. Form No. 13—4,000—19-3-02.

BACK PAPERS.

No.	Date.

Sent to Government with No.   I.,
dated   190 .

Printed with G.O., No.   I.,
dated   190 .

REMINDERS ISSUED.

No.	1,	dated	190 .
”	2	”	
”	3	”	
”	4	”	
”	5	”	

KEEP-WITHS.

FURTHER PAPERS.

No.	Date.
(2/6 M	16-8-02

Memo No $\frac{11}{102 KS}$

With reference to Endorsement No. 53 - I dated 3-5-02 of the Superintending Engr. 2nd Circle, the undersigned has the honour to inform him that the Estimate for improvements to the West Tammilom Escape will be submitted for the sanction of Govt. as soon as the plan + Estimate of the lift shutter now under revision in the P.W. Workshops are received.

ASM
9/5/02

Init
12/5/02

D E J
~~The Genl. Supt.~~ P.W. Workshops has been requested (by telephone) to say when the revised plan + Estimate of shutter may be expected in this Office. His reply is awaited, + will be submitted on receipt.

[initials]
6/5/02

Why has there been so much delay.

File sent to Supt on 15-5-02

[initials] 15-5-02

To
The Superintending Engr.
2nd Circle

[initials]
Exe
6/5/02

[E. I. / 6] 00—22-11-00.

Public Works (1902) Department

(IRRIGATION BRANCH.)

CURRENT No. ~~216 M~~ Urgent 1 PWE17 / 5787/2

From

[Name]

[Designation] The General Inspect

[Station] P. W. Workshops.

No. W/7 C/9

Dated 16. 5. 1902.

Enclosures { *Plans* 1 / *Others* 1 } *Total* 1

Spare copies

Received 17. 5. 1902.

Registered 17. 5. 1902.

SUBJECT.

West Tammileru escape — subg a copy of plan & estimate for — with counterbalanced arrangement

C. E. I.

BACK PAPERS.

To ... to Tele message of 13-5 ...

Received in C.E.'s branch on 21/5/02

FURTHER PAPERS.

RS 17 5 2

Urgent

N.B.—In any future communication on this subject, the number and date of this letter should be quoted.

No. W.C / 7.D.

PUBLIC WORKS Workshops

"Mint Post Office",

Madras, 16 May 1902.

From

F. W. Ashpitel Esqre

GENERAL SUPERINTENDENT,

PUBLIC WORKS Workshops

To

THE Chief Engineer
for Irrigation,
Madras.

SIR.

With reference to your Telephone message of yesterday's, I have the honor to submit a copy of the plan and Estimate for "West Tammileru Escape" with counter-balanced arrangement.

Enclosures. ~~One.~~
1 Copy of Plan (in 2 Sheets)
1 Estimate Detail & Abstract

I have the honor to be
Sir,
Your most Obedient Servant

A Egerton Ferns
16/5/02

For Genl Suptdt P.W. Workshops

Public Works Department,
V Circle.

PUBLIC WORKS ~~STORES~~ Workshops

From

GENERAL SUPERINTENDENT,
PUBLIC WORKS ~~STORES~~, Workshops

To

THE ______________________

____

____

R 216 W / 17.5.02

No. ~~S~~ W.

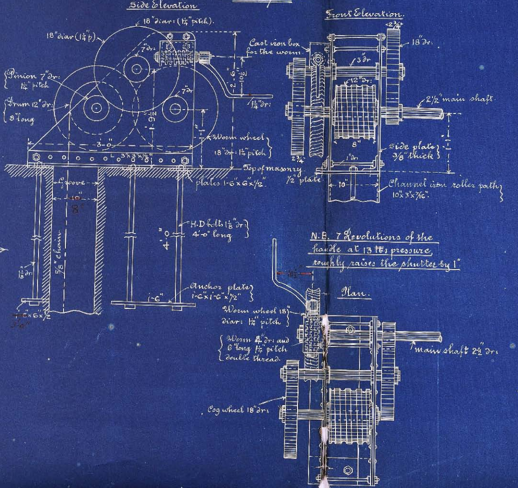
Dated ____________
Despatched ____________ } ____________ 190 .
Received ____________

No. OF ENCLOSURES.

Subject.

Revised form of Gearing for Lift Shutters for West Tammileru Escape

Scale 1/10.



N.B. 7 Revolutions of the handle at 13 lbs pressure, roughly raises the shutter by 1"

Madras:
19th December 1901

M. Brown
17.12.01
General Superintendent,
P.W. Workshops.

Supd. Engr. Second Circle

CHIEF ENGINEER
APPROVED
2? MAR. 1902
FOR IRRIGATION

SUPG. ENGINEER
No. 10/1248H2
18 FEB

CHIEF ENGINEER
FOR IRRIGATION.
5 APR. 1902
No. 123 Kd
12

PWE 20
5737/2

2 SE

4/1248 K.E.
18 FEB. 1902
P.W.D.
SECOND CIRCLE

Report to accompany the Estimate for Improvements to West Tammileru Escape. Estimate Rs. ~~21,400~~ 21,900.

The drainage area of the Tammileru river, above the Ellore Canal, is about 457 Square miles. The drainage is passed across the Canal by two inlets in its left bank, and by two escapes, the East and West Tammileru Escapes, in the right bank.

The West Tammileru escape Consists of 12 main arched vents each of 16 span; and each 16 ft. span is divided into two 8 ft. spans by a grooved post in the middle. The Shutters are each 8 ft. wide and 5½ ft. high, the full supply depth of water being level with the top of the shutters. Each 8 ft. shutter is raised by means of a single rising screw only 1½" diameter and an unsatisfactory pattern of screw box. The gearing is not at all powerful enough: it takes about 5 men to start each shutter, and the raising is very difficult and tedious

This

This is specially objectionable in the case of this escape, as the freshes in the Tammileru usually come down very suddenly, bringing large quantities of sand and debris. The establishment for working the shutters consists of only 5 lascars, and it can easily be understood that when a sudden fresh comes down at night, it is sometimes impossible to finish raising the 24 shutters before the flood has reached its maximum.

CHIEF ENGINEER FOR IRRIGATION. 6 - APR 1902 No. 123 K.I./8

It is now proposed to remove the existing shutters and gearing and to replace them by iron Roller shutters of 16 ft. span and worm gearing of a design received from the General Superintendent R.W. Work shops, Madras ~~(a copy of whose report is attached)~~ || This may be omitted -

W. J. Hoult[?]
Ex. Engineer
K.E.W.

Ro E11 573/?

C/ 16/2/02

PW CNo. 5737
Recd. Regd. 6-6-02

19 / M 6 } 25

PUBLIC WORKS DEPARTMENT,

IRRIGATION BRANCH.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Estimate of Rs 29,520 for lift shutters to the West Tammileru escape, Kistna Delta.

READ the following

From the Supg Engineer, II Circle, dated 12th March 1901 No. 360-I
To do do " 6 April 1901 No. 57 KS. / II
From do do " 4 April 1902 No. 3-I.
From do do " 3rd May 1902 No. 53-I / II
To do do " 12 May 1902 No. 102 KS.
From the General Supt, P.W. Workshops, d/ 16th May 1902 No. 10/7 C.I.

Print report flagged R.

Note by the Chief Engr. for Irrigation — No 149 I

The drainage of the lands commanded by the Tammileru river above the Ellore Canal, Kistna Eastern delta, passes across the Canal by 2 inlets in its left bank and by 2 escapes, called the West and East Tammileru Escapes in its right bank. It has been found impossible for the establishment attached to the work to raise the existing shutters in the West Tammileru Escape in time during floods. With the first of the papers read above, the Supg Engineer, Second Circle, submitted an estimate for fitting lift shutters in lieu of the

Issue
4/6/02
2

Existing Screw-gearing ones which were reported to be unsatisfactory. As the ~~section of the channel irons~~ bracing allowed in the design was not strong enough, the estimate was returned to the Supg Engineer for revision with instructions to provide stronger channel irons. With his 2nd letter read above, he submitted a revised estimate of Rs 21,600 for the work. As it was considered necessary to provide counter-weights for the shutters, the design was revised by the General Supt, P.W. Workshops, thus raising the amount of the estimate to Rs 24,000. The estimate as altered may be approved & forwarded for the sanction of the Govt of India.

2. The work is classed as "unremunerative" as it is not directly remunerative in itself but being required for the full development of the Kistna Delta System may be charged to the Open Capital Account thereof. It will probably be completed by the 31st March 1903.

Order thereon: No 660 I. of 12 June 1902 Irrigation

The following estimate

E. I. Form No. 1—1,000—10-5-01.

is approved.

48

Imperial

Capital Expenditure not charged to Revenue.

49. Irrigation.

Kistna delta System.

Eastern division

Open Capital Account

Ellore Canal

I. Works.

2. Main Canals & Branches

4. Escapes.

Unremunerative work

Providing counterweighted lift shutters for the West Tammiler Escape.

		Rupees
Estimate	I Works	24,000
	II Establishment	5,520
	Total	29,520

2. Ordered that a copy of these Proceedings together with the estimate & plans for the work referred to be forwarded to the Govt of India with a request that sanction to the estimate may be communicated at an early date.

A
2-6-02

(H.E. No. 661 [illegible] 12 June 1902)

Endorsement

To

The Chief Engr. for Irrign.
" Supg Engr. II Circle.
" Exr. P.W. Accts

Forwarded.

D 20/6/02

DESPATCHED 23 [illegible]

[illegible] 26/5/02
25/5/02

Note Blue print plan of Tammiler [illegible]

[illegible] 29/5/02

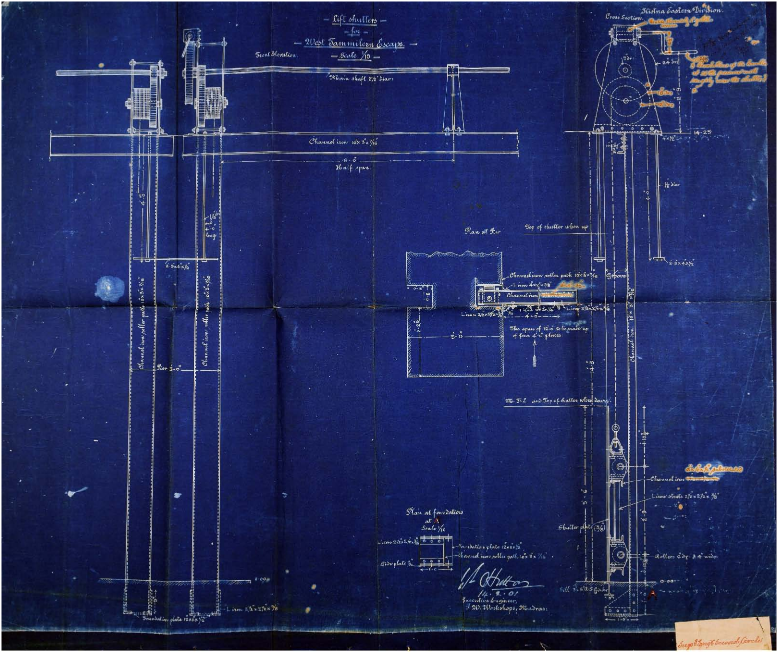
[illegible] 28/5/02

E. I. Form No. 1 (a)—250—1-11-97.

HD
PMS

The sites & places to go to India are tied separately. They have been selected by the C.R.T.

[illegible]
11/6/02


Lift shutters
for
West Tammileru Escape.
Scale 1/10
Front Elevation.
Main shaft 2½" diar:
Channel iron 10"x 3"x 7/16"
6'-0"
Half span.
Kistna Eastern Division.
Cross Section.
7" dr
24" dr
14·25
4"x½"
1½" diar
Top of shutter when up
2·3"x 4"x ½"
Plan at Pier
Channel iron roller path 10"x 3"x 7/16"
Groove
The span of 16'-0" to be made up of four 4'-0" plates.
Pier 3'-0"
M. F. L. and Top of shutter when down.
Channel iron
L iron struts 2½"x 2½"x 3/8"
Shutter plate (3/8)
Rollers 6" dr: & 4" wide.
0·00
Sill 3"x 5" R.S. Girder
L iron 2½"x 2½"x 3/8"
Foundation plate 12"x 11"x ½"
Plan at foundations
at A
Scale 1/10
Foundation plate 12"x 11"x ½"
Channel iron roller path 10"x 3"x 7/16"
Side plate ½"
14. 2. 01
Executive Engineer,
P. W. Workshops, Madras:

Left Shutter for
West Tammulem Escape
Kistna Eastern Div.
M. Brown
7.12.01

CHIEF ENGINEER
FOR IRRIGATION.
6 APR 1902
123 K.I.
10

16 FEB

APPROVED
28 MAY 1902
CHIEF ENGINEER FOR IRRIGATION

Left Shutter for
West Tammulem escape